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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/942,939 | 08/31/2001 | Min Seok Oh | P-0261 | 8961 |
| 34610 | 7590 | 10/07/2005 | EXAMINER | |
| FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153 | | | LAMARRE, GUY J | |
| | | ART UNIT | PAPER NUMBER | |
| | | 2133 | | |

DATE MAILED: 10/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/942,939 | OH, MIN SEOK | |
| | Examiner | Art Unit | |
| | Guy J. Lamarre | 2133 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 26 July 2005 and 01 September 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-3, 5-8, 11-13, 16 and 17 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-3,5-8,11-13,16 and 17 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 8/31/01 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.



Continued Examination Under 37 CFR 1.114

* A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission of 01 September 2005 has been entered.

Response to Amendment

0. This office action is in response to Applicants' amendment of 26 July and 01 September 2005.

0.1 **Claims 9, 10, 14 and 15 are cancelled, Claims 1, 2, 8, 11-13 are amended, Claims 8-17 are added. Claims 1-3, 5-8, 11-13, 16 and 17 remain pending.**

0.2 The prior art claim rejections and objections of record are withdrawn in response to Applicants' amendment.

Response to Arguments

1. Applicants' arguments have been fully considered, and are deemed persuasive only to the extent that the amended approach, whereby 'binary equivalence matrix is of m times rows and columns of non-binary matrix and non-binary symbols have GF(2m) dimension,' is not specifically disclosed in detail by prior art references of record. Wolf "On codes derivable from the tensor product of check matrices; 'IEEE Transactions on Information Theory, Publication Date: Apr 1965 Volume: 11 , Issue: 2 ;On page(s): 281 - 284 discloses such approach on page 282 at col. 1.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions

and requirements of this title.

2.1 Claims 1-2, 8, 11, and 12 are rejected under 35 U.S.C. 101 as claiming a mathematical formula or algorithm. Applicant is advised to modify limitations of said claims as being incorporated or embedded in hardware or readable machine medium, 'via a computer code' being seen as non-hardware or readable machine medium (**Claims 1-2**), to the extent that the computer product medium is a transmission medium (**Claims 8, 11, 12**).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

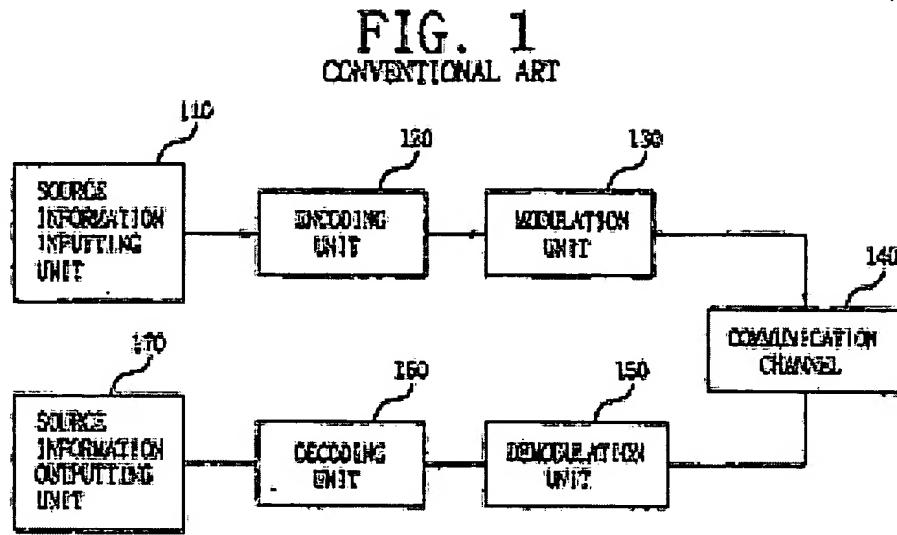
3.1 Claims 1-3, 5-8, 11-13, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by **WOLF** "*On codes derivable from the tensor product of check matrices.*"

As per Claims 1-3, 5-8, 11-13, 16 and 17, WOLF discloses the procedure whereby non-binary codes are transformed into binary codes on pages 281 – 284, in particular on page 282 at col. 1.

Claim Rejections - 35 USC ' 103

4. **Claims 1-3, 5-8, 11-13, 16 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants' Admitted prior art** (hereinafter **Admitted prior art**) in view of **Jedwab et al.** (US Patent No. 6,373,859; filed: 8 May 1998) in further view of **WOLF**.

As per Claims 1-3, 5-8, 11-13, 16 and 17, Admitted prior art substantially discloses the claimed RS coding conversion means, in **Admitted prior** Fig. 1, comprising: encoding/decoding/trellis processing/modulation/demodulation means as seen in **Admitted prior** Fig. 1, and means for



generating binary equivalence of the code by multiplying systematic generator matrix (Fig. 2 for matrix representation) and binary information sequence of the code; and generating row and column vectors (Fig. 2 for matrix representation) using the binary equivalence of the code as a component code. {See **Admitted prior art** Figs. 1-2, and related description.}

Not specifically described in detail in **Admitted prior art** is the step whereby the code is Reed-Solomon or non-binary.

However Jedwab et al., in an analogous art, discloses a generator matrix that converts plural non-binary sequences into binary sequences and vice versa for data processing. {See **Jedwab et al.**, Id., e.g., Fig. 13 and col. 72 line 1 et seq.}

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure in the **Admitted prior art** by including therein data conversion means as taught by **Jedwab et al.**, because such modification would provide the procedure disclosed in **Admitted prior art** with a technique whereby “*data processing hardware is optimized for plural binary and non-binary data streams to thereby reduce communications system costs.*” {See **Jedwab et al.**, col. 72 line 45 et seq.}

While Admitted prior art and Jedwab et al. substantially disclose the procedure for the claimed method or apparatus, they fail to specifically mention that the approach whereby 'binary equivalence matrix is of m times rows and columns of non-binary matrix and non-binary symbols have GF(2m) dimension.

However WOLF, in an analogous art, discloses algorithms for non-binary to binary signal conversion for RS coding along with symbol matrix sizing means as multiple of rows/columns of non-binary matrix wherein such techniques are described. {See WOLF, Id., on page 282 at col. 1}.

In particular, Equations 4-7 describe reception of non-binary signal, transformation of such non-binary signal into a binary signal. Such transform can be represented as or is equivalent to the claimed approach whereby non-binary symbol matrix is of GF(2m) dimension with associated sizing means.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure of the Admitted prior art and Jedwab et al. by including therein non-binary-to-binary transform methods as taught by WOLF, because such modification would provide the procedure disclosed in the Admitted prior art and Jedwab et al. with a technique whereby data communications equipment is optimized via conversion of complex non-binary codes into much simpler binary structures, thereby resulting in substantial cost savings, coding circuitry reduction and faster data processing. {See WOLF, Id., at page 284.}

Conclusion

- The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- Any response to this action should be mailed to:

or faxed to: (703) 872-9306 for all formal communications.

Hand-delivered responses should be brought to Customer Services, 220 20th Street S., Crystal Plaza II, Lobby, Room 1B03, Arlington, VA 22202.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy J. Lamarre, P.E., whose telephone number is (571) 272-3826. The examiner can normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert De Cady, can be reached at (571) 272-3819.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-3609.

Information regarding the status of an application may also be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Guy J. Lamarre, P.E
Primary Examiner
9/19/2005